

There have been two determinations made of the parallax of this star; the first determination was by the heliometer by Gill in 1882, and the second was by micrometric measures by Hall in 1884. The results were :

Gill,	0".16	19.6 light years.
Hall,	0".22	14.6 light years.

If we assume the mean of these, or 0".19, as the most probable value, the dimensions of the orbit and the combined mass of the two components can readily be determined. We find that the sum of the masses of the two components is nine-tenths the mass of our sun, and that the semi-major axis of the true orbit is 23.5 times the distance from the earth to the sun. The orbit is thus larger than the orbit of Uranus, but inferior to that of Neptune.

UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA.

SOME ABORIGINAL LANGUAGES OF QUEENSLAND AND VICTORIA.

BY R. H. MATHEWS, L.S.,

MEMB. ASSOC. ETRAN. SOC. D'ANTHROP. DE PARIS.

(*Read October 3, 1902.*)

Last year I contributed to this Society a short description of the Gundungurra, one of the native tongues of New South Wales. In the following pages it is proposed to furnish the outlines of the grammatical structure of some aboriginal languages spoken by the native tribes of Queensland and Victoria.

The method of spelling adopted is that recommended by the Royal Geographical Society of London, with the following qualifications :

As far as possible vowels are unmarked, but in some instances the long sound of a, e, and u are indicated thus, ā, ē, ū. In a few cases, to avoid ambiguity of pronunciation, the short sound of u is thus represented, ũ.

G is hard in all cases. R has a rough, trilled sound, as in "hurrah!" W always commences a syllable or word. Y at the beginning of a word or syllable has its ordinary consonant value.

The sound of the Spanish ñ often occurs; at the beginning of a

word or syllable I have given it as *ny*, but when terminating a word the Spanish letter is employed.

Ng at the beginning of a word or syllable has a peculiar nasal sound. At the end of a syllable it has substantially the sound of ng in "sing."

Dh is pronounced nearly as th in "that," with a slight sound of d preceding it. Nh has likewise nearly the sound of th in "that," but with an initial sound of the n. A final h is guttural, resembling ch in the German word "bach."

T is interchangeable with d, p with b, and g with k, in most words where these letters are used.

Ty and dy at the commencement of a word or syllable has nearly the sound of j. At the end of a word ty or dy is pronounced nearly as tch in "batch" or "ditch," omitting the final hissing sound.

All the details supplied in this article were taken down by myself from the lips of the natives speaking the languages herein dealt with—a tedious and laborious task.

THE MURAWARRI LANGUAGE.

In a communication to this Society in 1898 I described the social divisions and laws of intermarriage prevailing in the Murawarri tribe, together with a comprehensive list of totems, and will now proceed to exhibit the structure of their language. This tribe occupies an extensive region on the southern frontier of Queensland, between the Warrego and Culgoa rivers, reaching also some distance into New South Wales. Languages similar in grammar to the Murawarri, although differing somewhat in vocabulary, extend northerly into Queensland for hundreds of miles.

NOUNS.

Number.—Nouns have three numbers, the singular, dual and plural. Gula, a kangaroo. Gulabural, a pair of kangaroos. Guladhunna, several kangaroos. The suffix dhunna is frequently shortened to dhu, in rapid conversation.

Gender.—Mēn, a man. Mugiñ, a woman. Guthera, a small boy. Guthragamba, a small girl. The sex of animals is distinguished by using, after the name of the creature, the words dhungur, male, and guni, female, and these words take inflexion for number and case.

Case.—The principal cases are the nominative, causative (or nominative-agent), genitive, accusative, instrumental, dative and ablative.

The nominative merely names the animal or thing, as, nguruñ, emu; dhagguñ, padamelon; wirri, bandicoot; wagan, crow; mulli, boomerang; kinni, yamstick; gūndal, dog; gugai, opossum; ngura, a camp; wungga, a bird's nest.

Causative: Guladyu ngunna wirrunga, a kangaroo me scratched.

Instrumental: Mēndyu wagan mullinyu bundhara, a man a crow with a boomerang hit.

Genitive: Muingu kinni, a woman's yamstick. Wagangu wungga, a crow's nest.

Dative: Dhan yanna nguranggu, come to the camp.

Ablative: Dhirri yanna ngurango, go away from the camp.

Accusative: This is the same as the nominative.

ADJECTIVES.

Adjectives are placed after the nouns they qualify, and are similarly inflected for number and case.

Nominative: Gundal kittyu, a dog small; gundalbural kittyubural, a couple of small dogs; gundaldhu kittyudhunna, several small dogs.

Causative: Mugindyu thurdadyu guthera bundhara, a woman large a child beat.

Genitive: Mēngu thurdagu mulli, the large man's boomerang.

Adjectives are compared by using such phrases as, thurda nhu, kittyu nūngga, large this, small that. Superiority is implied by saying, thurdaburra, very large.

PRONOUNS.

Pronouns are inflected for number and person, and comprise the nominative, possessive and objective cases, some examples of which are given in the following table. There are forms in the first person of the dual and plural to express the inclusion or exclusion of the party addressed:

Singular.

	<i>Nominative.</i>	<i>Possessive.</i>	<i>Objective.</i>
1st Person.....	Ngadhu	Ngundi	Ngunna
2d "	Ngindu	Ingga	Bunga
3d "	Yallunggo	Ngumboga	Bunha

Dual.

1st Person	{	.....Ngulli	Ngulliga	Ngullinya
2d "		.....Ngullinūmba	Ngulligilunna	Ngullinyanumba
3d "		.....Nula	Nulaga	Nulanna
		.....Yallabural	Bulaga	Burannha

Plural.

1st Person	{	.....Nginna	Nginnaga	Ngurranna
2d "		.....Nginnadyula	Nginnagadyula	Ngurranadyula
3d "		.....Nura	Nuraga	Nuranna
		.....Yalladhunna	Dhurraga	Dhurrana

There are forms of the pronouns signifying "to me," "from me," "with me," and so on, as in the following few illustrations:

Dhangandhera dhiga, he brought it to me.

Dhirrithunggia dhigamil, he ran away from me.

Ngunnhura niambu, with me rests he.

Interrogatives: Ngangga, who? Nganngabural, who (dual)? Ngangadhunna, who (plural)? Ngangagu, whom belonging to? Minya, what? Minyanggu, what for?

Demonstratives: This, nhu; that, nhurana. These demonstratives are very numerous, according as the object referred to is in front of, behind, near, or far from the speaker. Many of them take inflexion for number and person.

VERBS.

Verbs have the singular, dual and plural numbers, the usual persons and tenses, and three principal moods—indicative, imperative and conditional. There is a distinctive form of the verb for each tense—present, past and future; but number and person are shown by short pronominal suffixes to the stem of the verb. These rules will be readily understood on perusing the following conjugation of the verb, bundhera, to beat:

Indicative Mood—Present Tense.

Singular....	{	1st Person.....	I beat	Bundhiyu
		2d "	Thou beatest	Bundhindu
		3d "	He beats	Bundhibu
Dual.....	{	1st Person.....	{ We, incl., beat	Bundhili
			{ We, excl., beat	Bundhilinūmba
		2d "	You beat	Bundhinula
		3d "	They beat	Bundhibula

Plural.....	{	1st Person.....	{ We, incl., beat	Bundhina
			{ We, excl., beat	Bundhinadyula
		2d "	You beat	Bundhinura
		3d "	They beat	Bundhira

Past Tense.

Singular....	{	1st Person.....	I beat	Bundharanyu
		2d "	Thou beatest	Bundharandu
		3d "	He beat	Bundharabu

Future Tense.

Singular....	{	1st Person.....	I will beat	Būnggunyu
		2d "	Thou wilt beat	Būnggundu
		3d "	He will beat	Būnggubu

It is thought unnecessary to give the dual and plural numbers of the past and future tenses.

Imperative Mood.

Positive.....	Beat	Būngga
Negative.....	Beat not	Būngga wulla

Conditional Mood.

I may beat	Wullawurri būnggunyu
------------	----------------------

Reflexive.

I am beating myself	Bundherriyu
I was beating myself	Bundherriayu
I will beat myself	Bundherriyuyu

The inflexion continues through all the persons.

Reciprocal.

Dual.....	{	We, incl., are beating each other	Bumbullāli
		We, incl., will beat each other	Bumbullaguli
Plural.....	{	We, incl., are beating each other	Bumbullana
		We, incl., will beat each other	Bumbullaguna

The second and third persons of the dual and plural also take reciprocal inflexion.

The following examples show the native way of expressing the English verb "to be":

Present.	I am well	Murriñ indiyu (well am I)
Past	I was well	Murriñ indayu (well was I)
Future	I will be well	Murriñ ingyuy (well will be I)

ADVERBS.

Yes, kaila. No, wulla. Here, nunggo. There, ngurra. Now, kunyegaila. By and bye, kunye. Yesterday, gūnda. Tomorrow, būrda. A few days ago, buggera dhurungga. Long ago, muttyagaila. Perhaps, wullawurri. Slowly, mūn-gi. Rapidly, kurdu-gurdu. Where, dhirrungga? Where (if two), dhirrambula? Where (plural), dhirradhunna? How many, minyungurra?

PREPOSITIONS.

In front, kurbu. Behind, billungga. In the rear, durungga. Inside, mugungga. Outside, bullungga. Beside me, gurgungga dhiga. Between, dhunnūngga. Down, burrungga. Up, gūnda. Over or across (referring to a river, hill, etc.), gurrundha. This side of, nhubarañ. The other side, beyond, gowurrigurrundha. Through, gaimyu. Towards, dhai. Away from, dhirra.

Several prepositions take inflexion for number and person: Behind me, billunggadhiga. Behind thee, billunggabunga. Behind him, billunggabuga. Behind us, billunggangurri, and so on.

CONJUNCTIONS AND INTERJECTIONS.

It is not thought necessary to supply illustrations of these parts of speech.

NUMERALS.

One, yaman. Two, kubbo. Several, murabirri.

THE WAMBA WAMBA LANGUAGE.

This language is spoken among the remnants of the native tribes about Swan Hill on the Murray river, and extending southerly into the State of Victoria beyond Lalbert and Tyrrell creeks, the lower Avoca river, etc. The people are divided into two phratries, Gamaty and Gurgity, the men of one phratry marrying the women of the other. For lists of totems attached to these phratries, the reader is referred to a paper I contributed in 1898 to the Anthropological Society at Washington.¹

¹ "The Victorian Aborigines: their Initiation Ceremonies and Divisional Systems," *American Anthropologist*, Vol. xi, pp. 333, 334. Map of Victoria, Plate V.

All the languages spoken in the eastern portion of Victoria are identical in grammatical structure with the Gundungurra language reported by me to this Society last year, although their vocabularies are altogether different. Westward of the 145th meridian of longitude all the Victorian languages have the same structure as the Wamba Wamba, with the exception of a strip of country on the lower Murray river.

NOUNS.

Number.—Karrange, a kangaroo. Karrange bullang, two kangaroos. Karrange girtāwal, several kangaroos.

Gender.—Wurtūnge, a man. Laiur, a woman. Banggo, a boy. Bannulaiur, a girl. Bupu, a child of either sex. The sex of animals is indicated by using the word mamo for males, and baba for females; thus, willunge mamo, a male opossum; willunge baba, a female opossum.

Case.—The nominative: Wanne, a boomerang. Kenninge, a yamstick. Wirrangin, a dog. Lūrnge, a camp.

The Causative: Wurtulu karange dhakkin, a man hit a kangaroo. Laiuru bupu dhakkin, a woman beat a child.

Possessive: Wurtua wanne, a man's boomerang. Every object over which ownership can be exercised is subject to inflection for number and person, thus:

Singular	$\left\{ \begin{array}{l} \text{1st Person} \dots\dots\dots \\ \text{2d} \quad \text{“} \quad \dots\dots\dots \\ \text{3d} \quad \text{“} \quad \dots\dots\dots \end{array} \right.$	My boomerang	Wannai
		Thy boomerang	Wannin
		His boomerang	Wannu

This declension extends to all the persons and numbers, in each of which one example will be sufficient:

Dual.....	Our, inclusive, boomerang	Wannul
Trial.....	Our, inclusive, boomerang	Wannangurkullik
Plural.....	Our, inclusive, boomerang	Wannungur

Dative: Lūrndal, to the camp.

Ablative: Lūrnung, from the camp.

ADJECTIVES.

Adjectives follow the noun qualified, as kūrwinge kurong-untu, an emu large. Kurwinge bannutu, an emu small. They are inflected for number and case like the nouns, and comparison is effected as in the Murawarri

PRONOUNS.

Pronouns have four numbers, singular, dual, trial, and plural. There are double forms of the first person to include or exclude the person spoken to. The following table shows the nominative and possessive pronouns :

Singular.

1st Person.....I	Yetti	Mine	Yenneu
2d "Thou	Nginma	Thine	Nginneu
3d "He	Kinyi or Kalu	His	Kikinga

Dual.

1st Person...	{	We, incl.,	Ngulli	Ours, incl.,	Ngullidha
		We, excl.,	Ngullu	Ours, excl.,	Ngulludhu
2d "		You	Nyula	Yours	Nyuladhu
3d "		They	Kalubulang	Theirs	Kinyebuladhu

Trial.

1st Person...	{	We, incl.,	Yangurkullik	Ours, incl.,	Yanguradhukullik
		We, excl.,	Yandakullik	Ours, excl.,	Yandhadhukullik
2d "		You	Ngutakullik	Yours	Ngutadhukullik
3d "		They	Kaludhanakullik	Theirs	Dhanadhukullik

Plural.

1st Person...	{	We, incl.,	Yangur	Ours, incl.,	Yanguradhu
		We, excl.,	Yandhank	Ours, excl.,	Yandhadhu
2d "		You	Nguta	Yours	Ngutadhu
3d "		They	Kaludhana	Theirs	Dhanadhu

There are objective forms of the pronouns, signifying me, with me, towards me, from me, and so on. Interrogative and demonstrative pronouns are also various and precise.

VERBS.

Verbs have the same numbers and persons as the pronouns, three tenses and three principal moods ; as exhibited in the following conjugation of the verb "to sit" :

Indicative Mood—Present Tense.

Singular	{	1st Person.....I sit	Ngangan
		2d "Thou sittest	Ngangar
		3d "He sits	Nganga

Dual.....	$\left\{ \begin{array}{l} \text{1st Person...} \\ \text{2d " } \\ \text{3d " } \end{array} \right.$	$\left\{ \begin{array}{l} \text{We, incl., sit} \\ \text{We, exclu., sit} \\ \text{You sit} \\ \text{They sit} \end{array} \right.$	Ngangangul
			Ngangangullu
			Nganganyulu
Trial.....	$\left\{ \begin{array}{l} \text{1st Person...} \\ \text{2d " } \\ \text{3d " } \end{array} \right.$	$\left\{ \begin{array}{l} \text{We, incl., sit} \\ \text{We, exclu., sit} \\ \text{You sit} \\ \text{They sit} \end{array} \right.$	Ngangangurkullik
			Ngangandhankullik
			Ngangangutakullik
Plural.....	$\left\{ \begin{array}{l} \text{1st Person...} \\ \text{2d " } \\ \text{3d " } \end{array} \right.$	$\left\{ \begin{array}{l} \text{We, incl., sit} \\ \text{We, exclu., sit} \\ \text{You sit} \\ \text{They sit} \end{array} \right.$	Ngangangur
			Ngangandhak
			Nganganguta
			Ngangandhana

Past Tense.

Singular	$\left\{ \begin{array}{l} \text{1st Person.....} \\ \text{2d " } \\ \text{3d " } \end{array} \right.$	$\left\{ \begin{array}{l} \text{I sat} \\ \text{.....Thou sattet} \\ \text{.....He sat} \end{array} \right.$	Nganginan
			Nganginar
			Ngangin

Future Tense.

Singular	$\left\{ \begin{array}{l} \text{1st Person.....} \\ \text{2d " } \\ \text{3d " } \end{array} \right.$	$\left\{ \begin{array}{l} \text{I will sit} \\ \text{.....Thou wilt sit} \\ \text{.....He will sit} \end{array} \right.$	Nganginyan
			Nganginyar
			Ngangiñ

The remaining moods are omitted, being similar in constitution to those of the Murawarri.

This is the first occasion on which the *trial*, or *triple*, number has been reported in the verbs of any Australian language. Mr. J. J. Carey, from the MS. of the late Mr. F. Tuckfield,¹ published a list of pronouns in what he calls the Woddowro language, but which I spell Wuddyāwurru, in which he shows an incomplete set of trial pronouns. He did not, however, observe the double form in the first person of the dual, trial and plural, which is now communicated by me in the languages of Victoria for the first time.²

Among the native tribes on the upper Campaspe, Lodden and Avoca rivers, instead of *kullik* being the sign of the trial, the word *baiap* is employed, as, Ngurnabuingunyinbaiap, we three sit.

¹ *Rep. Aust. Assoc. Adv. Sci.*, Vol. vii, p. 842 and p. 853.

² I have, however, previously discovered and reported the existence of two forms of the first person of the dual and plural in the nouns, pronouns, verbs, adverbs and prepositions of the Gundungurra, one of the native languages of New South Wales: *PROC. AMER. PHILOS. SOC.*, Vol. xl, pp. 140-148.

Tyilbungunyinbaiap, we three beat. It will be apparent that the words *baiap* or *kullik* are merely superadded to the suffix of the plural.

In the Motu, one of the languages of New Guinea, Rev. W. G. Lawes reports that the dual and trial of pronouns are formed by additions to the plural.¹

If a line be assumed to be drawn on the map of Victoria from Melbourne to Echuca, then the whole of that portion of Victoria situated on the eastern side of that line has no trial number in its speech, but in all the languages to the west of that line the trial number obtains.

ADVERBS AND PREPOSITIONS.

In principle these resemble the same parts of speech in the Murawarri and Gundungurra, and some of them take similar inflexion for number and person.

Interjections and exclamations are not numerous and have been omitted.

NUMERALS.

One, yuwaia. Two, bulle. Several, girtāwal.

A NEW FRESH-WATER MOLLUSCAN FAUNULE FROM THE CRETACEOUS OF MONTANA.

(Plate IV)

BY TIMOTHY W. STANTON.

(Read April 3, 1903.)

An interesting collection of fresh-water invertebrate fossils, collected in Montana by a recent expedition from the Geological Department of Princeton University, has been placed in my hands for study through the courtesy of Prof. W. B. Scott and Dr. A. E. Ortmann. Although the collection contains only half a dozen species, it is of more than usual interest on account of the excellent preservation of the fossils and the fact that they probably come from either a new horizon for fresh-water mollusks, or at least a new

¹ *Motu Grammar* (Sydney, 1896), p. 9.